an intended white light by simultaneous light emission of the fluorescent substances, so that light within the wave range is emitted with intensity to compensate for attenuation of light within the wave range absorbed by the filter.

REMARKS

INTRODUCTION:

In accordance with the foregoing, claims 1-22 have been amended, and claims 23-28 have been added.

Claims 1-28 are pending and under consideration.

OBJECTIONS TO THE DRAWINGS:

In the Office Action, at page 2, the drawings were objected to. The specification has been amended to address the Examiner's objection. Therefore, the outstanding drawing objections should be resolved.

Reconsideration and withdrawal of the outstanding objections to the drawings is respectfully requested.

OBJECTION TO THE TITLE:

In the Office Action, at page 2, the title was objected to as not being descriptive. In view of the proposed amended title set forth above, the outstanding objection to the title should be resolved.

Reconsideration and withdrawal of the outstanding objection to the title is respectfully requested.

CHANGES TO THE SPECIFICATION:

The specification has been reviewed in response to the Office Action. Changes have been made to the specification only to place it in preferred and better U.S. form for issuance and to resolve the Examiner's objections raised in the Office Action.

REJECTION UNDER 35 U.S.C. §112:

In the Office Action, at page 3, item 7, claim 1 was rejected under 35 U.S.C. §112, first paragraph, for the reasons set forth therein. This rejection is traversed and reconsideration is requested.

Claim 1 recites an apparatus for displaying whitish light comprising three fluorescent substances and a filter. The fluorescent substances are set to emit, in combination, unfiltered non-whitish light with a spectrum such that the combined light emitted by the substances is whitish after passing through the filter. The substances are set by adjusting their relative luminosities, as mentioned in the specification at page 15, line 20, through page 16, line 4 (describing luminosity ratios). Adjusting relative luminosity to obtain whitish filtered light is also described at page 13, line 18, through page 14, line 8, which describes increasing the luminosity of the substance emitting the attenuated light in order to display filtered whitish

light. Page 23, lines 10-15 also describe R cells more luminous than R cells in the prior art. Claim 1 has been amended for clarity and withdrawal of the objection is respectfully requested.

Claim 2 recites "a structural condition ... different from ... other display elements." The "other display elements" being referred to are the display elements with luminosity decreased in proportion to the recited element with a different structure. This meaning of "other display elements" is disclosed at page 22, lines 10-14, which introduces embodiments in which "the cells have different cell structures." The "cells" are the "display elements" in claim 2 which have a structural condition (page 14, lines 11 and 12, equating "cells" with "display elements"). Furthermore, the variation of a structural condition of a cell (display element) is disclosed in the specification at least at page 23, lines 6-10, and in figure 9.

Claim 2 also recites a display element with a higher light-emission intensity. The higher intensity is disclosed, among other places, at the sentence spanning pages 13 and 14. Said sentence describes the substances (in Table 1) as having relative luminosities such that the intensity of [the substance emitting] the attenuated wavelength region is relatively stronger [than the substances which do not emit the attenuated wavelength region]. This reading of the sentence spanning pages 13 and 14 is understood in view of the entire specification which discloses a plasma display having a filter to decrease the display of red light emitted by the discharge gas while at the same time increasing the intensity of the flourescent substance which emits red light in order to compensate for red light attenuation caused by the filter. Claim 2 has been amended to more clearly recite that the first substance is more luminous than the second and third substances. Withdrawal of the objection to claim 2 is respectfully requested.

Claim 3 recites that the different structural condition is an area of the electrode. Claim 4 recites the electrode area difference is such that the area of the R cell (i.e. the first substance) is larger than the area of the G and B cells (i.e. the second and third substances). Lines 6-10 on page 23 disclose that the electrodes are comprised of the metal film 242 and the transparent film 241. The same portion of the specification discloses that the widths of the films are not uniform. In view of page 23, lines 10 and 11, the widths of the electrodes are non-uniform with respect to the G and B cells; the electrodes in the R cells (i.e. the first substances) are wider than the electrodes in the G and B cells (i.e. the second and third substances). The R cells are also disclosed as the cells having an area greater than the G and B cells because only the R cells are described as protruding into the discharge gap, and the protrusion increases the area of the electrode contacting the flourescent gas within the discharge gap, thereby increasing its luminosity (page 23, lines 7-10; Fig. 9). Claim 3 has been amended to more clearly reflect that the difference in area of the electrodes is with respect to the R, G, and B cells (i.e, the first, second, and third substances). Claim 4 has been amended to reflect an area difference where the area of the electrodes in the R cells (i.e. the first flourescent substance) is greater than the area of the electrode in the G and B cells (i.e. the second and third substances). Withdrawal of the objections to claims 3 and 4 is respectfully requested.

Claim 5 recites that the differing structural condition is an emitting area of the display element. Claim 6 recites that the emitting area difference is such that the emitting area of the R cell (i.e. the first substance) is larger than the emitting area of an R cell without the recited filter. Claims 5 and 6 can be fully understood by looking to figure 10 and page 24, lines 2-11.

Figure 10 depicts an R cell which has a larger surface dimension than the G and B cells, in contrast to the prior art, in which their emitting areas are equal. Page 24, lines 2-11, discloses an R cell with an emitting area larger than a similar cell in the prior art; larger than a cell in a PDP which does not include the recited filter. Claim 5 has been amended to more clearly recite that the structural difference is the emitting area of a display element. Claim 6 has been amended to more clearly recite that the difference is such that the R cell's emitting area (i.e. the first substance) is larger than the emitting area of an R cell in the prior art. Withdrawal of the objections to claims 5 and 6 is respectfully requested.

Claims 7 and 8 recite that the thickness of the dielectric layer 417 over the R cell (display element) is less than the thickness of the dielectric layer 417 over the G and B cells. Support for this feature is found at page 25, lines 1-5 of the specification, which explains that the prior art systems had a reduced luminescence in the R cell and a thicker dielectric layer than the R cell recited in claims 7 and 8. In order to generate a stronger discharge in the R cell in the present invention, the dielectric layer in the present invention's R cell is thinner than the dielectric layers of R cells in the prior art. Claims 7 and 8 have been amended to more clearly recite the specified limitation of differing and reducing the thickness of the dielectric layer. Withdrawal of the objections to claims 7 and 8 is respectfully requested.

Claim 13 recites that, within a red wavelength region, the filter transmits longer wavelengths more readily than shorter wavelengths, thereby increasing the transmission of red light emitted by the fluorescent substance (longer red wavelengths), while decreasing the transmission of red light emitted by the discharge gas. This is supported by the specification at

page 19, lines 1-9. Figure 7A, in view of figure 12, also supports claim 13 because it depicts a filter in which light emitted by the fluorescent substance, said light peaking past 590 nm (Fig. 12), is filtered less than the red light emitted by the discharge gas, said light peaking in a range of shorter red light near 590 nm (Figs.7A and 12). Claim 13 has been amended for clarity. Withdrawal of the objection to claim 13 is respectfully requested.

REJECTION UNDER 35 U.S.C. §102:

In the Office Action, at page 7 (items 16-19), claims 1-9, 11-14, and 16-20 were rejected under 35 U.S.C. §102 in view of Wada. This rejection is traversed and reconsideration is requested.

Wada discusses a color filter for use in a display device, where the color filter reduces the reflection of ambient light that adversely affects the contrast of the display device (Abstract, lines 6-12). These filters are designed to only allow the color of the display element over which they are laid to pass through, with the remaining colors being filtered. As such, Wada discloses using filters that totally transmit one color of light, and totally absorb other colors (col. 10, lines 23-36). Wada does not describe, as recited in claim 1, display elements "set to emit, in combination, a color other than a whitish color when a color to be displayed using the display device is the whitish color", or a filter "to approximate to the whitish color the color to be displayed." Nor does Wada describe a display element that has its intensity adjusted such that its luminance is greater than if the first display element is used to generate the whitish color in conjunction with the second and third display elements without the filter,

as recited in claims 2, 4, 6, 8, and 9 (e.g., claim 2, "intensity ... higher than ... required ... to reproduce the whitish color ... without said filter"). For the foregoing reasons, withdrawal of the rejections of claims 1, 2, 4, 6, 8, and 9 is respectfully requested.

Further regarding claim 1, the cited prior art displays a white color using only a PDP module. The PDP of the present invention, however, is set to emit a color other than a whitish color intended for display, and the filter mounted on the PDP changes the emitted other color to display to the whitish color intended to be displayed. Claim 1 is further distinguishable and withdrawal of the rejection is respectfully requested.

The Examiner alleged that a recitation of claim 11 was recited in narrative form, and therefore was not given patentable weight. The Examiner's reliance on "Official Notice" is traversed because the state of the prior art does not appear to be at issue. There is no basis for disregarding the recitation recited in claim 11 and its treatment as non-limiting is respectfully traversed. According to MPEP §2173.05(g), functional language alone does not render a claim unpatentable. The recitation of claim 11 is not part of the preamble and is not a means-plus-function recitation. Claim 11 is a valid dependent claim because it further limits claim 1 by reciting a functional feature of the filter element. For clarity, claim 11 has been amended to positively recite the previously claimed recitation. The recitation is respectfully requested to be given full patentable weight.

The Examiner rejected claim 14 as anticipated by Wada. However, the citation to Wada discusses *transmissivity peaks* within the recited range. Claim 14 recites the opposite and is not discussed by Wada. Claim 14 recites that the *lowest* transmissivity for the filter is

within the wavelength range. Withdrawal of the rejection of claim 14 is respectfully requested.

Dependent claims 3, 5, 7, 11-14, and 16-20 are deemed patentable due at least to their depending from independent claim 1. Withdrawal of their rejections is respectfully requested.

REJECTION UNDER 35 U.S.C. §103:

In the Office Action, claims 10, 15, 21, and 22 were rejected under 35 U.S.C. §103 in view of Wada and Yoshida, Wada and Suzuki, Wada and Asano, and Wada and Raber. The reasons for the rejections are set forth in the Office Action and are not repeated. The rejections are traversed and reconsideration is requested.

Claims 10, 15, 21, and 22 depend from claim 1. It was pointed out in the remarks regarding the §102 rejections that Wada does not disclose claim 1's recited feature of approximating non-whitish light emitted by the discharge gas to whitish light. Yoshida, Suzuki, Asano, and Raber were cited for other features and they do not discuss the limitations of claim 1; their inclusion does not compensate for the features of claim 1 absent from Wada. Because claims 10, 15, 21, and 22 depend upon allowable claims, withdrawal of their rejection is respectfully requested.

The Examiner alleged that Yoshida teaches a filter combined with a PDP for the purpose of increasing the color temperature. The filter recited in claim 10 has the function of increasing the color temperature of the light emitted by the fluorescent substances. Yoshida does not teach a filter used for increasing color temperature on a PDP. Yoshida also does not teach increasing the color temperature of non-whitish light such that the filtered light becomes

whitish. Furthermore, the Examiner did not provide a motive for combining Yoshida with Wada. The Examiner stated that it would have been obvious to combine without giving any explanation as to the motive or desirability to combine. As cited by the Examiner, the filter is used in Yoshida to correct for sensitivity differences. Neither Wada nor the present invention discuss sensing light and so any motive based on light sensitivity is inapplicable. Withdrawal of the rejection of claim 10 is respectfully requested.

The Examiner alleged that Suzuki discusses a filter with the absorption peaks recited in claim 15. Suzuki discusses infrared absorbing filters produced using a process which includes the addition of certain base materials. The base materials are used in the process of forming infrared compounds which filter in the range of 600 nm and up (col. 1, par. 1; col. 7, lines 53-58). The Examiner cited the base compounds having absorptive peaks in the range of 400-800 nm as equivalent to the filter in claim 15 with absorptive peaks in the ranges of 470-520 nm and 560-610. However the base material is not a filter, and where cited is an unstable coupler or dye used in photographic light-sensitive materials (see cols. 55 and 56; and col 55., second p.). The base material in Suzuki is not a filter, and therefore Suzuki does not discuss a *filter* with the peak ranges recited in claim 15. The filters discussed in Suzuki are *infrared* filters in the range of 600 nm or more.

If the Examiner is relying on Suzuki's filters with peaks of 600 nm or more, then the filters are not described with sufficient specificity because Suzuki describes a broad range which slightly overlaps the narrow range recited in claim 15 (see MPEP §2131.03). In item 27 of the Office Action, the Examiner notes that Suzuki describes filters directed to non-visible

light. With respect to Suzuki, the filter recited in claim 15 has the unexpected result of filtering visible light, and therefore is not anticipated by Suzuki. If the Examiner deems the filter recited in claim 15 to be expected, then the Examiner must provide reasons for anticipation as well as a motivational statement regarding obviousness (MPEP §2131.03). The cited base material in Suzuki is not equivalent to the filter recited in claim 15, and therefore Wada combined with Suzuki does not anticipate claim 15. Withdrawal of the rejection of claim 15 is respectfully requested.

CONCLUSION:

In accordance with the foregoing, it is respectfully submitted that all outstanding objections and rejections have been overcome and/or rendered moot. And further, that all pending claims patentably distinguish over the prior art. Thus, there being no further outstanding objections or rejections, the application is submitted as being in condition for allowance which action is earnestly solicited.

If the Examiner has any remaining issues to be addressed, it is believed that prosecution can be expedited by the Examiner contacting the undersigned attorney for a telephone interview to discuss resolution of such issues.

If there are any underpayments or overpayments of fees associated with the filing of this Amendment, please charge and/or credit the same to our Deposit Account No. 19-3935.

Respectfully submitted,

STAAS & HALSEY LLP

By _____
John C. Garvey
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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE TITLE:

Please **DELETE** the existing title and **REPLACE** with the following:

--Gas Discharge Display Device With Particular Filter Characteristics--.

IN THE SPECIFICATION

Please **AMEND** the paragraph beginning at page 11, line 24 and ending on page 12, with the following paragraph:

--The PDP 1 is a three-electrode surface discharge PDP in which pairs of first and second main electrodes X and Y are disposed in parallel for generating an electric discharge for sustaining light-emission, and define cells (display elements) at intersections of the main electrodes X, Y with address electrodes A as third electrodes. The main electrodes X and Y extend in the direction of lines, i.e. in the horizontal direction, on the screen. The second main electrodes Y are used as scanning electrodes to select cells line by line in addressing. The address electrodes A extend in the direction of columns, i.e., in the vertical direction, and are used as data electrodes to select cells column by column in the addressing. A region on a substrate surface were the main electrodes intersect with the address electrodes is a display surface ES.--

Please **AMEND** the paragraph beginning at page 12, line 13, with the following paragraph:

--In the PDP-1, a pair of main electrodes X and Y is disposed on each line on an inside surface of a glass substrate 11 which is a base member for a front-side substrate assembly. The 10 line is a row of cells in the horizontal direction on the screen. The main electrodes X and Y each include an electrically conductive transparent film 41 and a metal film bus conductor) 42 and is covered with a dielectric layer 17 of a low melting point glass of about 30μm thickness. A protection film 18 of magnesia (Mg0) of several thousand A thickness is disposed on a surface of the dielectric layer 17. The address electrodes A are arranged on an inside surface of a glass substrate 21 which is a base member for a rear-side substrate assembly 20. The address electrodes A are covered with a dielectric layer 24 of about 10μm thickness. On the dielectric layer 24, ribs 29 of about 150μm height are each disposed between the address electrodes A. The ribs 29 are in the form of a linear band in a plan view. These ribs 29 partition a discharge space 30 for each sub-pixel (a unit light-emission area) in the row direction and also define a gap dimension for the discharge space 30. Fluorescent layers 28R, 28G and 28B of three colors R, G. and B for color display are formed to cover a rear-side inner surface including a portion above the address electrodes A and side walls of the ribs 29. Preferable examples of the flourescent substances are shown in Table 1.--

IN THE CLAIMS

Please **AMEND** the following claims:

1. (ONCE AMENDED) A gas discharge display device for displaying a color image, comprising: [by means of]

first, second and third fluorescent substances having different emission colors and a common front side, wherein said first, second, and third fluorescent substances are set to emit, in combination, a color other than a whitish color when a color to be displayed using the display device is the whitish color [reproduced by light-emission of the first to third fluorescent substances for displaying a white pixel is set to be different from a white color intended for display,]; and

a filter [is] disposed on [a] the front side of the first to third fluorescent substances, to receive the emitted color other than the whitish color and to approximate to the whitish color the color to be displayed using the display device [for approximating a display color of the white pixel to the white color intended for display].

2. (ONCE AMENDED) The gas discharge display device of claim 1, wherein a structural condition of a first display element corresponding to [the] said first fluorescent substance is different from structural conditions of [other] second and third display elements corresponding to said second and third fluorescent substances, and

a light-emission intensity of the first display element [corresponding to the first fluorescent substance] is higher than a light-emission intensity of the first display element [corresponding to the first fluorescent substance] having a required [which] intensity to reproduce the [is required in reproducing a white] whitish color to be displayed [intended for

display by means of] using the light emission of the first to third display elements [corresponding to the first to third fluorescent substances] without said filter.

3. (ONCE AMENDED) The gas discharge display device of claim 2, wherein each of the display elements comprises a pair of electrodes to generate an [for generating] electric discharge between the electrodes to allow the fluorescent substances to emit light, and the structural condition is an area of the electrodes.

4. (ONCE AMENDED) The gas discharge display device of claim 3, wherein the area of the electrodes in the first display element [corresponding to the first fluorescent substance] is larger than an area of the electrodes in the first display element [corresponding to the first fluorescent substance which] having an area that is required to reproduce [is required in reproducing] the [white] whitish color intended for display using [by means of] the light emission of the first through third display elements [corresponding to the first to third fluorescent substances] without said filter.

5. (ONCE AMENDED) The gas discharge display device of claim 2, wherein each of the display elements comprises a pair of electrodes [for generating] to generate electric discharge between the electrodes to allow the fluorescent substances to emit light, and the structural condition of each display element is an area of a light-emission region of the fluorescent substance.

6. (ONCE AMENDED) The gas discharge display device of claim 5, wherein the area of the light-emission region of the fluorescent substance comprises a fluorescent substance layer in the first display element [corresponding to the first fluorescent substance] that is larger than an area of the light-emission region of the fluorescent substance layer in the first display element [corresponding to the first fluorescent substance which] having an area that is required [in reproducing] to reproduce the [white] whitish color intended for display [by means of] using the light emission of the display elements [corresponding to the first to third fluorescent substances] without said filter.

7. (ONCE AMENDED) The gas discharge display device of claim 2, wherein each of [the] said display elements comprises

a pair of electrodes to generate an [for generating] electric discharge between the electrodes to allow the fluorescent substances to emit light, and

dielectric substance layers that cover the respective electrodes, and

the structural condition is a thickness of the respective dielectric layers.

8. (ONCE AMENDED) The gas discharge display device of claim 7, wherein the thickness of the dielectric substance layers in [the] said first display element [corresponding to the first fluorescent substance] is [smaller] less than a thickness of the dielectric substance layers in the first display element [corresponding to the first fluorescent substance which] having a thickness that is required to reproduce [in reproducing] the [white] whitish color

intended for display [by means of] using the light emission of the display elements without said filter [corresponding to the first to third fluorescent substances].

9. (ONCE AMENDED) The gas discharge display device of claim 1, wherein a light-emission intensity of a first display element corresponding to [the] said first fluorescent substance is higher than a light-emission intensity of the first display element [corresponding to the first fluorescent substance which] having an intensity that is required to reproduce [in reproducing] [a white] the whitish color intended for display [by means of] using the light-emission of [the] first through third display elements corresponding to [the] said first to third fluorescent substances without said filter.

10. (ONCE AMENDED) The gas discharge display device of claim 1, wherein [the] said filter has a color correction function for increasing a color temperature value.

11. (ONCE AMENDED) The gas discharge display device of claim 1, wherein [the] said filter [has a characteristic of attenuating] attenuates an intensity of light in a red wavelength region.

12. (ONCE AMENDED) The gas discharge display device of claim 1, wherein [the] said filter has a characteristic such that an average transmissivity of light in a green wavelength

region is lower than an average transmissivity of light in a blue wavelength region, and higher than an average transmissivity of light in a red wavelength region.

13. (ONCE AMENDED) The gas discharge display device of claim 1, wherein within a red wavelength region, [the] said filter has a characteristic such that a transmissivity of a longer wavelength [side of a red wavelength region] is higher than a transmissivity of a shorter wavelength [side of the red wavelength region].

14. (ONCE AMENDED) The gas discharge display device of claim 1, wherein [the] said filter has a characteristic such that a wavelength providing the lowest transmissivity has a value within a range of 560 to 610 nanometers.

15. (ONCE AMENDED) The gas discharge display device of claim 1, wherein [the] said filter has a characteristic such that absorption peaks appear at least in a wavelength region of 470 to 520 nanometers and in a wavelength region of 560 to 610 nanometers.

16. (ONCE AMENDED) The gas discharge display device of claim 1, [wherein the gas discharge display device comprises] further comprising a pair of substrates for forming a discharge space therebetween, and [the] wherein said filter is formed directly on an inner or outer surface of one of [the] said substrates that constitutes a display surface.

17. (ONCE AMENDED) The gas discharge display device of claim 1, [wherein the gas discharge display device comprises] further comprising a display panel [incorporating] having a discharge space therein with arranged display elements, and [the] wherein said filter is fabricated separately from [the] said display panel and disposed on a front side of [the] said display panel.

18. (ONCE AMENDED) The gas discharge display device of claim 1, [wherein the gas discharge display device comprises] further comprising a display panel [incorporating] having a discharge space therein with arranged display elements and a transparent protection plate for protecting a display surface of [the] said display panel, and [the] wherein said filter is disposed on an inner or outer surface of the protection plate.

19. (TWICE AMENDED) The gas discharge display device of claim 1, wherein [the] said filter is a pigment filter.

20. (TWICE AMENDED) The gas discharge display device of claim 1, wherein [the] said filter is a multi-layer film filter.

21. (ONCE AMENDED) The gas discharge display device of claim 1, wherein [the] said first fluorescent substance is a fluorescent substance for red composed essentially of (Y, Gd) BO_3 : Eu, [the] said second fluorescent substance is a fluorescent substance for green

composed essentially of Zn_2Si0_4 : Mn_x and [the] said third fluorescent substance is a fluorescent substance for blue composed essentially of $BaMgA1_{10}0_{17}$: Eu.

22. (ONCE AMENDED) The gas discharge display device of claim 1, [wherein the gas discharge display device has] further comprising a discharge space filled with a Penning gas composed essentially of neon and xenon as a discharge gas.

Please **ADD** the following new claims:

23. (NEW) A method of displaying a whitish color using a gas discharge display device for displaying a color image, comprising:

receiving a command to display the whitish color;

emitting a color other than the whitish color using first, second and third fluorescent substances having different emission colors; and

filtering the emitted color to display the whitish color.

24. (NEW) The method of claim 23, wherein said emitting the color other than the whitish color comprises:

emitting a first light using a first display element corresponding to the first fluorescent substance, wherein the first light has a greater intensity than an intensity required to produce the whitish color without said filtering; and

emitting second and third lights using second and third display elements corresponding to

the second and third fluorescent substances.

25. (NEW) The method of claim 24, wherein the emitting the first light comprises generating an electric discharge in the first display element between first electrodes having first areas, wherein the first areas are greater than areas of first electrodes that are required to produce the whitish color without said filtering.

26. (NEW) The method of claim 24, wherein the emitting the first light comprises using a first fluorescent substance layer in the first display element, wherein the first fluorescent substance layer has a first light emission area that is greater than a light emission area of the first fluorescent substance layer that is required to produce the whitish color without said filtering.

27. (NEW) The method of claim 24, wherein the emitting the first light comprises generating a first light using a first pair of electrodes, the first pair of electrodes having first dielectric layers that are thinner than first dielectric layers that are required to produce the whitish color without said filtering.

28. (NEW) A gas discharge display device using a plasma display panel having a plurality of discharge cells formed within a discharge space between a front substrate and a rear substrate, each of the discharge cells including a discharge gas therein and being provided

with one of fluorescent substances of red, green and blue, the fluorescent substances being selected to emit light for performing color display, said device comprising:

a filter having a characteristic of absorbing light within a wave range of visible light emitted by the discharge gas, the filter being disposed on a front side of the front substrate of the plasma display panel, wherein, in the plasma display panel, a light-emission intensity of at least one of the fluorescent substances of red, green and blue is set to be larger than the light-emission intensity of at least one of the said fluorescent substances at displaying an intended white light by simultaneous light emission of the fluorescent substances, so that light within the wave range is emitted with intensity to compensate for attenuation of light within the wave range absorbed by the filter.